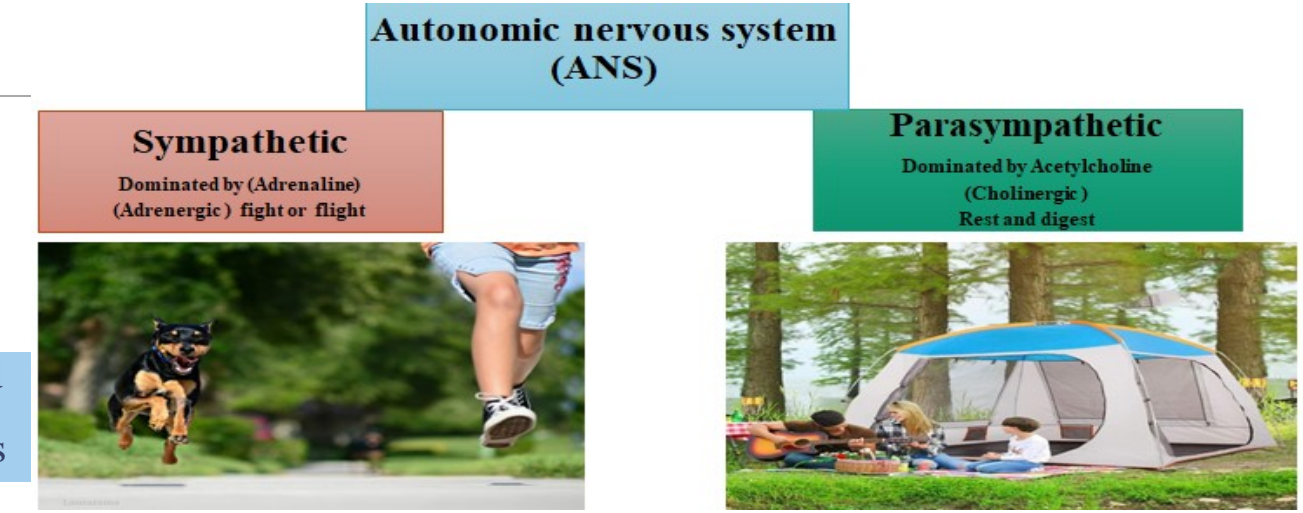
Al-Mustaqbal University College
Department of Pharmacy
5th stage/2024
Clinical Toxicology
Lecture: 2

Anticholinergic Toxicity



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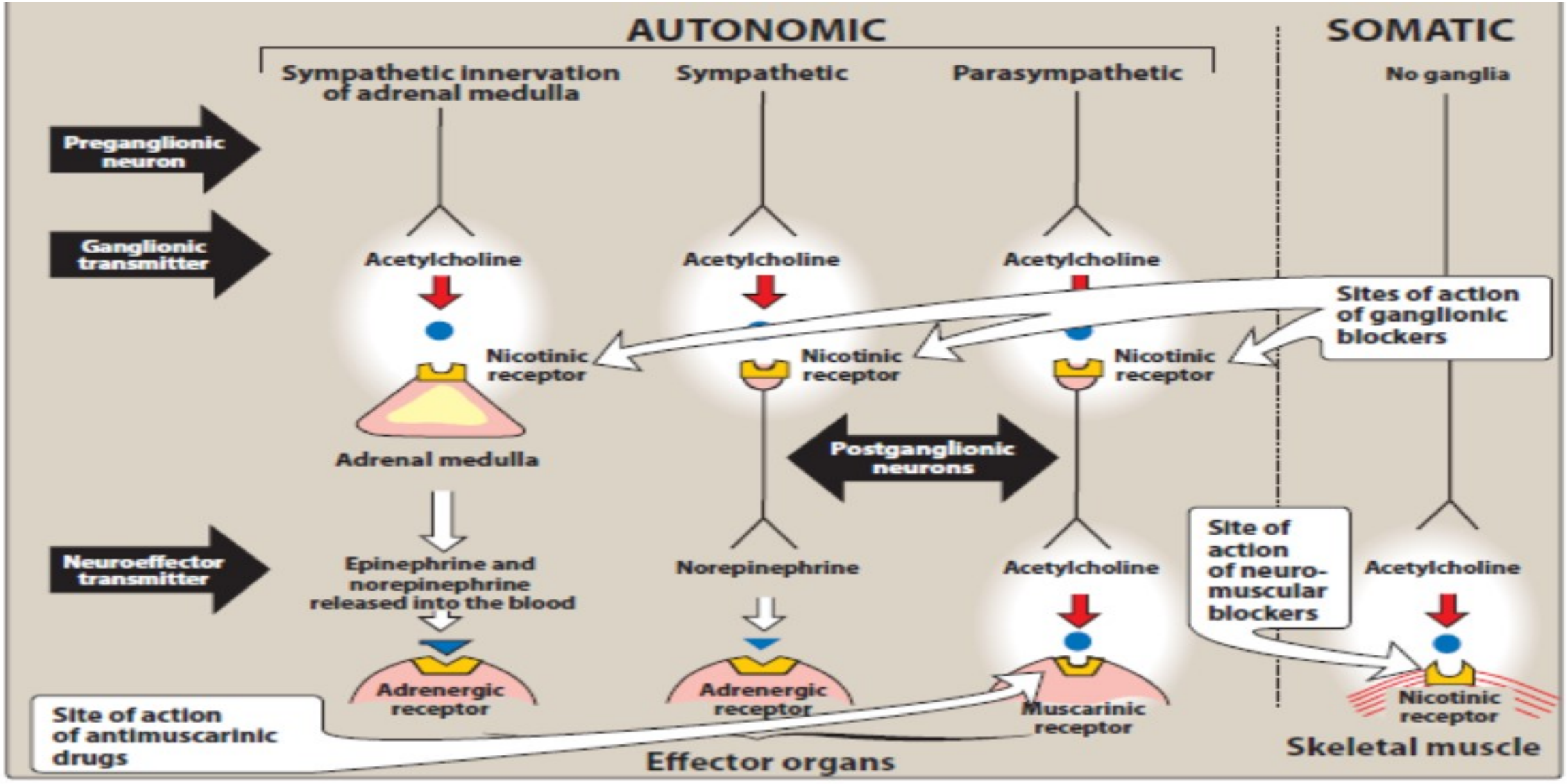
Outline

- Anticholinergic toxicity ?
- Autonomic Nervous System
- Toxidrome Clinical Manifestation :
- Clinical Manifestation :
- Management and Antidote

Multiple organ adverse effect

Autonomic nervous system



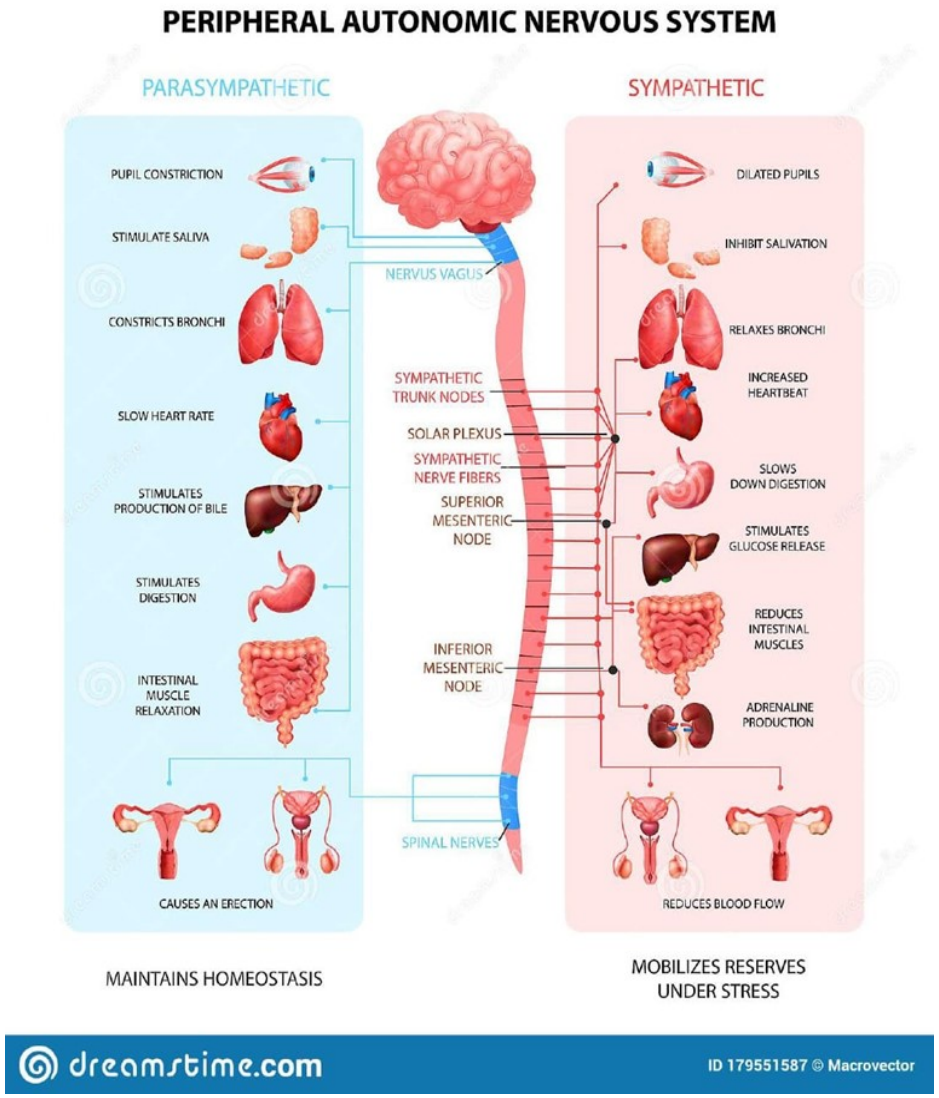
Anticholinergic Drug Toxicity

Cholinergic antagonist

is an agents that bind to cholinorceptors (muscarinic or nicotinic) and prevent the effects of acetylcholine (ACh) and other cholinergic agonists.

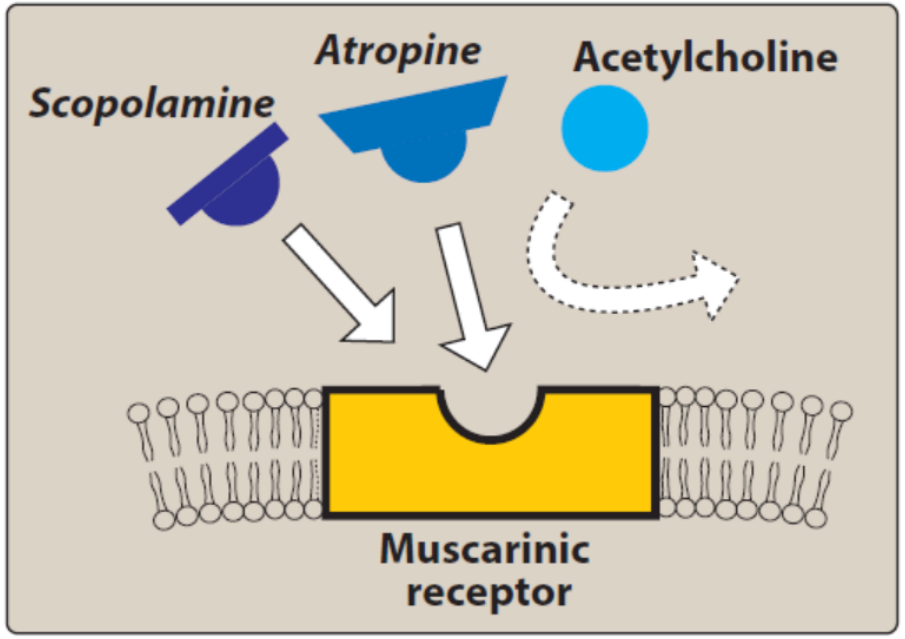
The most clinically useful of these agents are selective blockers of muscarinic receptors.

The effects of parasympathetic innervation are, thus, interrupted, and the actions of sympathetic stimulation are left unopposed.



Toxidrome and clinical manifestations

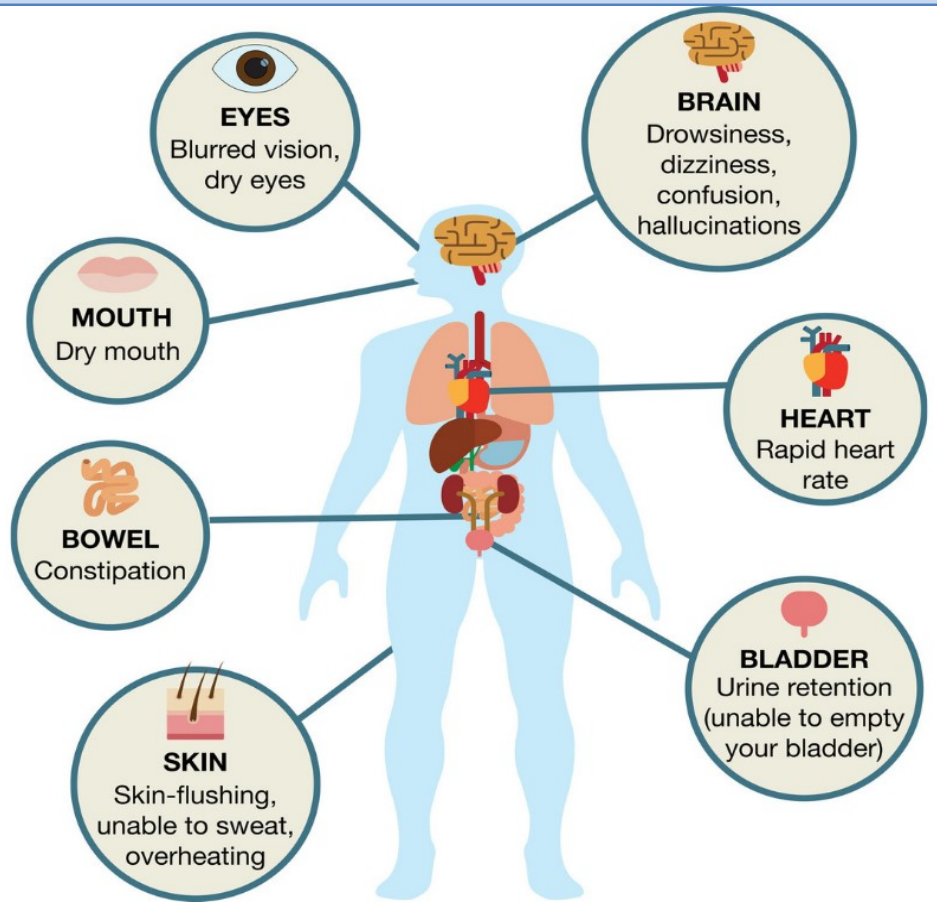
- **Anticholinergic syndrome is produced by the inhibition of cholinergic neurotransmission at muscarinic receptor sites.**
- **It commonly follows the ingestion of a wide variety of prescription and over-the-counter medications.**



Toxidrome and clinical manifestations

Signs and symptoms:

- **Clinical manifestations are caused by:**



CNS effects

Peripheral nervous system effects

- **Or both**

Toxidrome and clinical manifestations

Clinical manifestations may include:

- Flushing
- Dry skin and mucous membranes
- Mydriasis with loss of accommodation
- Altered mental status
- Fever

Toxidrome and clinical manifestations

Additional manifestations include the following:

- **Sinus tachycardia**
- **Decreased bowel sounds**
- **Urinary retention**
- **Hypertension**

Anticholinergic Drugs

Agents with anticholinergic properties are as follows:

1. Anticholinergics

- ✓ Atropine
- ✓ scopolamine

2. Antihistamines

- ✓ Chlorpheniramine
- ✓ Cyproheptadine
- ✓ Diphenhydramine
- ✓ Promethazine

Anticholinergic Drugs

Agents with anticholinergic properties are as follows:

3. Antipsychotics

- ✓ **Chlorpromazine**
- ✓ **Clozapine**
- ✓ **Thioridazine**

4. Antispasmodics

- ✓ **Clidinium**
- ✓ **Hyoscyamine**
- ✓ **Propantheline**

Management

Treatment:

- ✓Initial assessment and stabilization are required
- ✓Ensure an adequate airway and check that breathing is present and maintained.
- ✓Assess circulation and initiate cardiac and pulse monitoring.
- ✓GI decontamination with activated charcoal is recommended.
- ✓Ipecac syrup is contraindicated.
- ✓Ventricular arrhythmias can be treated with lidocaine.
- ✓Manage seizures with benzodiazepines.

Management -Antidote

❖The antidote for anticholinergic toxicity is (Physostigmine salicylate.)

Physostigmine

❖ Physostigmine is the only reversible acetylcholinesterase inhibitor capable of directly antagonizing the CNS manifestations of anticholinergic toxicity.

❖It is an uncharged tertiary amine that efficiently crosses the blood brain barrier.

Management -Antidote

By inhibiting acetylcholinesterase, the enzyme responsible for the hydrolysis of acetylcholine, an increased concentration of acetylcholine augments stimulation at muscarinic and nicotinic receptors.

Physostigmine can reverse the central effects of coma, seizures, severe dyskinesias, hallucinations, agitation, and respiratory depression.

The most common indication for physostigmine is to control agitated delirium.

Physostigmine is contraindicated in patients with cardiac conduction disturbances (prolonged PR and QRS intervals) on ECG analysis.


Thank
you!